low-speed performance than the MD-11, says Airbus. Spoilers and ailerons will work together on landing to give lift dumping across virtually the full span. The increased braking efficiency will allow thrust reversing to be omitted from the A340's outboard engines, Airbus believes.

Variable camber will enable Airbus to use the same wing for both the A330 and A340 despite their different flight regimes, while contributing a 3 per cent reduction in fuel burn. Camber changing using the trailing-edge flaps and ailerons will enable the wing to operate efficiently over a wider range of Mach numbers and lift coefficients than a fixed-geometry wing. The increased buffet boundary will allow aircraft weight increases without wing redesign.

Variable camber will be a function of the A330/A340 electronic flight control system. This will be a development of the A320 system, offering the same improvements in handling qualities and protection against stalling, overspeeding, overloading, excess attitudes, and windshear. Gust load alleviation, a weight-saving feature introduced on the A320, will be further improved on the A330/A340.

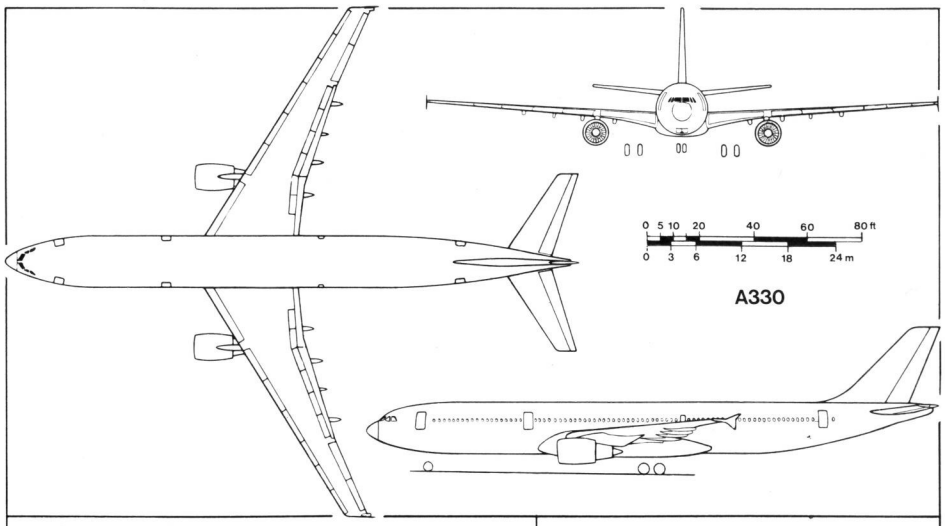
Airbus introduced carbonfibre primary structures into airline service with the A310-300 fin. The A320 has a carbonfibre fin and tailplane, as will have the A330/A340. For the first time, the A330/A340 carbonfibre tailplane will also be a fuel tank. Carbonfibre will also be used for the cabin floor beams. Some three tonnes of lightweight aluminium-lithium sheet will be used in the fuselage, saving 300kg, Airbus estimates.

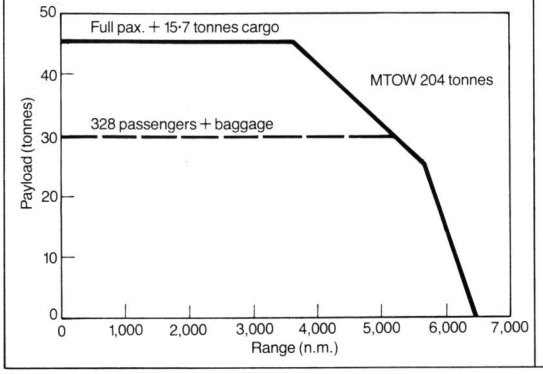
Airbus partner MBB studied a carbonfibre outboard wing section for the A330/A340, but decided that the certification time would be too long and that its production facilities could not yet cope. Despite this, carbonfibre is still regarded as a better near-term weight-saving route than aluminium-lithium within Airbus Industrie.

The A330/A340 flightdeck will be similar to that of the A320, with sidestick controllers and six 7·25in-square CRT displays. Commonality between the A330 and A340 cockpits will be virtually total, says Airbus, and an A320 pilot should be able to convert to either aircraft with minimal training. While Airbus expects few airlines to operate both the A330 and A340, it expects many to operate the 150-seat A320 and one of the new types.

Worksharing between Airbus partners on the A330/A340 airframe will be based on the A310 programme, while the systems split will be based on the A320. About 20 per cent of the work is being held back to be placed with companies of "commercial and strategic interest" in an effort to attract orders.

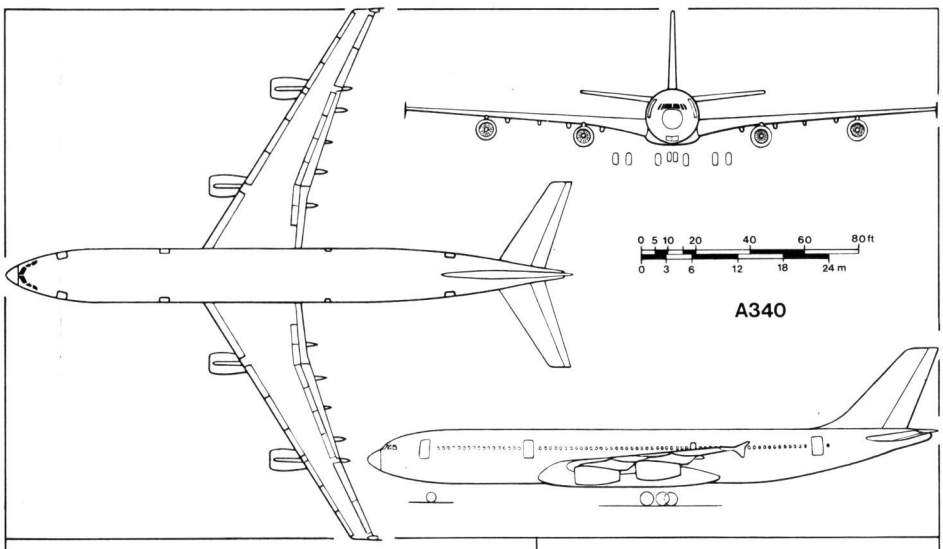
Wing manufacturer British Aerospace is the first Airbus partner to seek Government launch aid for the A330/A340, submitting a request for a £750 million repayable loan. If Airbus achieves its commonality target, BAe will need to know only at the last minute whether a wing is destined for an A330 and A340. ◀

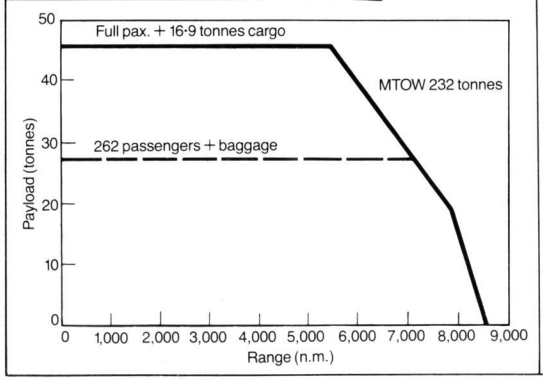




A330

Max take-off weight	204 tonnes
Max landing weight	165 tonnes
Max zero-fuel weight	155 tonnes
Fuel weight	72 tonnes
Passengers	
maximum	375
2-class	328
3-class	286
Range (328 pax)	5,200 n.m.





A340

Max take-off weight	232 tonnes
Max landing weight	167 tonnes
Max zero-fuel weight	155 tonnes
Fuel weight	102 tonnes
Passengers	
maximum	375
2-class	303
3-class	262
Range (262 pax)	7,100 n.m.

Airbus describes the A330 and A340 as two versions of the same aircraft